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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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09/663,964

09/19/2000

William R. Babbitt

5922-56160

5387

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7590

08/28/2002

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EXAMINER

JUBA JR, JOHN

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 08/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/663,964

Applicant(s)

BABBITT ET AL.

Examiner

John Juba

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-44 and 52-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-44 and 52-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 889
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

Applicants' I.D.S. of March 26, 2001 was late in being matched with the application papers, but has now been considered. The citation of Babbitt, et al (U.S. Patent number 5,812,318), although fully considered, has been lined-through as previously having been cited on the examiner's form PTO-892.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 27 – 34, 37, 38, 40, 42 – 44, and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Weiner, et al (*IEEE J. Quantum Elec.*). Referring primarily to

Figure 6 and the associated text in Section III at "C." Weiner, et al disclose a composite grating comprising a frequency non-selective "active" material (thermoplastic) and an ordered assemblage ("fringe pattern") of subgratings supported thereby for receiving input pulses and transmitting output pulses, each subgrating satisfying a grating condition to diffract light from an input path to an output path. Referring to section III at "C 1)", a first input optical pulse having a first, phase encoded temporal waveform produces an output waveform (Fig. 6b) having a prescribed output temporal waveform, whereas a second input pulse, not having the prescribed input temporal waveform does not produce an output pulse having the prescribed temporal waveform, but rather, produces a pseudorandom noise burst (e.g., Fig. 6d).

With regard to claims 28 and 29, Section IV discloses that the output pulse can emerge after or even before the readout pulse emerges. Thus, it stands to reason that there can be some temporal overlap according to the time differential between these events. With regard to claim 29, the input pulse enters the storage medium and the output pulse exits the medium. Thus, the two pulses are fairly traveling in "opposite" directions.

With regard to claim 53, the reference to "angular multiplexing" atop Page 2257 is a clear reference to Bragg angle selection in the hologram.

With regard to claim 43, a detected output waveform is plotted in each of Figures 6a – 6d. Thus, the apparatus of Weiner, et al had to include a detector "capable of detecting an optical pulse having a prescribed detectable temporal waveform (impulse)

different from each of the set of specific [input] temporal waveforms". The data source was similar to that of Figure 1, but incorporated a set of phase masks for data encoding.

With regard to claim 44, the case of angularly multiplexed holograms discussed atop Page 2257 fairly comprehends data routing.

With particular regard to claims 37, 38, 40, and 42, Weiner, et al disclose a setup wherein differently encoded waveforms are multiplexed using differently encoded input pulses (See Section III, at C 2 on Pg. 2257; "Storage . . ."). Clearly "retrieval" of the original waveform, or verification of such requires a detector capable of detecting the encoded waveform. The characterization of the coding as "address" encoding is not recognized as positively limiting the structure. The content of the message is not germane to the structure for encoding and/or storing the message. The subject matter of the dependent claims is disclosed as previously discussed.

Claims 27 – 31, 33, 35 - 38, 40 – 44, and 52 are rejected under 35 U.S.C. 102(e) as being anticipated by Kashyap, et al (U.S. Patent number 5,530,666). Referring to Figure 2 and the associated text, Kashyap, et al disclose a router (24) responsive to change the routing of data in response to an optical pulse ("header frame") having a prescribed detectable temporal waveform; a composite grating for receiving input light pulses along an a input path (10) and transmitting, in response thereto, output light pulses to the router along an output path (18), the grating comprising an ordered assemblage of Bragg subgratings, the subgratings being configured to trigger a prescribed temporal waveform detectable at comparator (22). At a given workstation, a

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second input temporal waveform, different from the first, does not trigger the detectable temporal output waveform prescribed for that workstation.

With regard to claims 28, 29, and 40, the output temporal waveform propagates in the opposite direction from the input waveform, and thus partially spatially overlaps therewith.

With regard to claims 30 and 31, the header frame is considered to be a brief pulse of substantially minimal duration. Thus, the selectively reflected header components are also regarded as being of substantially minimal duration.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 34, 39, 53, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashyap, et al (U.S. Patent number 5,530,666), in view of BRITISH TELECOMMUNICATIONS (WO 93/14424). As set forth above for claims 27 and 37, Kashyap, et al disclose the invention substantially as claimed. However, Kashyap, et al do not disclose the gratings as being supported by a substrate *surface* or each subgrating satisfying a *surficial* grating condition for the corresponding subbandwidth of light.

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In the same field of endeavor, BRITISH TELECOMMUNICATIONS disclose a composite grating comprising a plurality of subgratings supported by a substrate surface and each satisfying a surficial grating condition for a respective subbandwidth of light. BRITISH TELECOMM.

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Wood, et al teach that this construction is equivalent to a pattern of refractive index variations within a medium ^{Page 6, lines 22-30} (Col. 4, lines 13-19). Further, it is disclosed that this particular construction is realizable by directly writing the desired pattern with an electron beam.

It would have been obvious to one of ordinary skill to replace the refractive index variations within the medium of Kashyap, et al with an arrangement of gratings supported by the surface of a substrate and satisfying a surficial grating condition, since BRITISH TELECOMMUNICATIONS teach the two realizations to be equivalent. One of ordinary skill would have been motivated to make the substitution in the interest of permitting the complex array of subgratings to be directly written by e⁻-beam from a set of calculations, and avoiding the more complicated and time consuming optical setup for interferometric recording of refractive index variations.

Response to Amendment

Applicants' amendment is sufficient in overcoming the previous objection to the specification and abstract.

Applicants' claim amendments are sufficient in overcoming the previous objection to claims 37 – 44 for an informality therein.

(1) Wood, et al (U.S. 5,666,224) is the §371 of BRITISH TELECOMM. 4-18-03

Applicants' amendment to the specification and claim for benefit of earlier filing under 35 U.S.C. § 120 overcomes the rejection of claims 27 – 44 and 52 – 54 under 35 U.S.C. §102(b) as being anticipated by Babbitt, et al.

Applicants' amendment and remarks concerning the rejection of claims 37, 38, 41, and 42 under §102(b) as being anticipated by Galvanauskas, et al are not persuasive. The reference includes all that is fairly conveyed to one of ordinary skill. In the instant case, one of ordinary skill would understand that optical communications systems employing optical pulses inherently rely upon a detector for recovery of information in the pulses. Further, Galvanauskas, et al experimentally measure the dispersion characteristics of a linearly chirped QPM grating (Col. 5, line 47). Such measurement cannot have been undertaken without a detector of some sort. As to the recitation that the detector is "capable of" detecting light pulses having a prescribed detectable address encoded temporal waveform, it must first be noted^d that any light detector is "capable of" such use in combination with sufficient structure. Further, the claim requires only detection of such a signal, not decoding, discrimination, or proper routing of such a signal. Thus, the claim language fails to distinguish over the prior art to Galvanauskas, et al, *and like structures*. However, the rejection is *withdrawn* in light of Applicants' benefit of earlier filing under §120, whereby the Galvanauskas, et al patent is no longer prior art.

For similar reasons, Applicants' remarks concerning the rejection of claims 37, 38, and 40 – 42 under §102(b) as being anticipated by R. Kashyap, et al (*Electron. Lett.*) are also unpersuasive. Nonetheless, insofar as this reference no longer qualifies

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as prior art with respect to Applicants' new effective filing date, the rejection is *withdrawn*, and the issue is moot.

Applicants' remarks concerning the rejection of claims 27 – 31, 33, 35 - 38, 40 – 44, and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Kashyap, et al (U.S. Patent number 5,530,666) have been fully considered, but are unpersuasive. Since Kashyap, et al '666 clearly disclose "an ordered assemblage of gratings", it is inferred that Applicants' rebuttal hinges on the question of whether these subgratings are supported by an active material. The examiner appreciates that the conventional interpretation of "active material" is that of either a material that rotates the polarization of light passing therethrough, or a material in which stimulated emission rather than absorption probably will take place (*i.e.*, a gain medium). However, Applicants have taken steps to specifically *define* "active material" in their specification. While not *repugnant* to the ordinary meaning, the definition is indeed broader. Turning to the text atop Page 7:

"An active material" is a material that can passively deflect, according to the present invention, an optical beam or pulse having a particular temporal structure interacting with the material, the deflection occurring as a result of the optical beam or pulse interacting with structured spatial-spectral gratings formed in or on the active material by programming."

Turning to Page 37:

"An active material, as generally defined above, must be capable of supporting or otherwise providing a spatially dependent absorption or refractive-index variation. The active material can be, but need not be, optically programmable depending upon whether or not the material is to be optically

programmed. In addition, suitable materials can be frequency-selective of frequency non-selective."

Thus, when read in light of the specification, it must be found that the material of Kashyap, et al '666, by virtue of the subgratings supported in the form of refractive index variations in a fiber or photorefractive material (Col. 2, line 15) is indeed an active material. The reference is not deficient in the manner relied upon by Applicants, and the examiner persists that Kashyap, et al '666 anticipate the claimed subject matter.

The terminal disclaimer filed on February 21, 2002 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent number 5,812,318 has been reviewed and is accepted. The terminal disclaimer has been recorded. Applicants' submission of this terminal disclaimer is sufficient in overcoming the previous non-obviousness type double-patenting rejection of claims 27 and 37.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

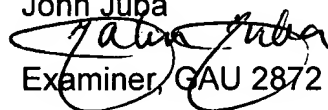
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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Juba whose telephone number is (703) 308-4812. The examiner can normally be reached on Mon.-Fri. 9 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on Mon.- Thu., 9 - 5. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

John Juba

Examiner, GAU 2872

JJ
August 20, 2002